

Serial No.: 10/612,554
Group Art Unit: 2813

REMARKS

Restriction

Affirmation of the June 17, 2004, provisional election of Group I, claims 1-5, with traverse is hereby made. Reconsideration of the restriction requirement is respectfully requested because both sets of claims are related to "a method of manufacturing a semiconductor device on a semiconductor substrate". In addition, the Examiner has searched and cited art related to transistors in Cherng below, which can be used with reference to claims 6-10 as well.

Priority

The present application is a divisional of copending U.S. Patent Application 09/974,917 filed October 10, 2001, now abandoned, which claims priority from U.S. Provisional Patent Application 60/239,395 filed on October 10, 2000. The divisional application was filed with a Preliminary Amendment which included priority information in the Cross-Reference to Related Application(s) section and set forth only that portion of the earlier disclosure which is germane to the invention as claimed in the divisional application. The status of the non-provisional parent application has been updated in the present amendment to the Cross-Reference to Related Application(s) section.

Claim Rejections - 35 USC §103

Claim 1 is rejected under 35 USC §103(a) as being unpatentable over Applicant's Admitted Prior Art (hereinafter "AAPA") in view of Matsunaga (USPN 6,392,310, hereinafter "Matsunaga").

Pertaining to claim 1, Applicants respectfully traverse the rejections since both AAPA and Matsunaga when taken as a whole teach away from the combination suggested by the Examiner.

Serial No.: 10/612,554

Group Art Unit: 2813

As explained in Applicants' specification page 2, lines 20-27, AAPA teaches miniaturization and teaches away from an extra layer that would increase the spacing between the AAPA stacked structures 210a and 210b:

"For miniaturization, it is desirable to form the self-aligned contacts as precisely and as finely as possible. However, the small geometry of the self-aligned contact mask for accomplishing this is a very difficult challenge for conventional lithographic processes.

A solution, which would allow further miniaturization of memory device without adversely affecting device performance or yield by increasing the process margin for the lithographic process has long been sought, but has eluded those skilled in the art. As the demand for higher performance devices and miniaturization continues at a rapid pace in the field of semiconductor, it is becoming more pressing that a solution be found."

As explained in Matsunaga col. 3, lines 41-45, an extra layer is required in Matsunaga to interrupt leakage current:

"According to the present invention, the leakage current path between the gate electrode and the ohmic electrode is successfully interrupted by providing the nitride film such that the nitride film covers a part of the gate electrode that faces the ohmic electrode."

AAPA teaches away from an extra layer and Matsunaga teaches that an extra nitride film is required. Further, AAPA with an extra nitride film would require extra etching, which would decrease process margin as would be evident to those having ordinary skill in the art. Still further, AAPA without the extra nitride layer would be subject to leakage current according to Matsunaga, and would be inoperative. Thus, it is respectfully submitted that claim 1 is allowable under 35 USC §103(a) as not being obvious based on AAPA in view of Matsunaga because:

"We have noted elsewhere, as a "useful general rule," that references that teach away cannot serve to create a prima facie case of obviousness... If references taken in combination would produce a "seemingly inoperative device", we have held that such references teach away from the combination and thus cannot serve as predicates for a prima facie case of obviousness." *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984)[deletion for clarity]

In addition, the Examiner has stated in the Office Action of June 28, 2004 (hereinafter the "Office Action"):

Serial No.: 10/612,554
Group Art Unit: 2813

"It would have been obvious to one of ordinary skill in the art to modify AAPA...as taught by Matsunaga, to reduce leakage current between a via and a gate electrode." [deletion for clarity]

The nitride layer taught by Matsunaga is used to reduce leakage current in Matsunaga but would be detrimental in AAPA, so there is no motivation for the combination and as stated in MPEP §2143.01:

"The combination of references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a *prima facie* case of obvious was held improper. The level of skill in the art cannot be relied upon to provide the suggestion to combine references. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2s 1161 (Fed. Cir. 1999)"

Claims 2-3 are rejected under 35 USC §103(a) as being unpatentable over AAPA (hereinafter "AAPA") in view of Matsunaga (USPN 6,392,310, hereinafter "Matsunaga") further in view of Lin et al. (USPN 6,407,002, hereinafter "Lin").

Pertaining to claims 2 and 3, Applicants respectfully traverse the rejections since the same arguments applied to the rejection of claim 1 apply for these claims.

In addition, the Examiner provides an unsupported rejection regarding the combination of AAPA, Matsunaga and Lin by stating in the Office Action:

"It would have been obvious to one of ordinary skill in the art to modify AAPA and Matsunaga...as taught by Lin et al., to provide a hard mask that can better control critical dimensions by minimizing standing wave effects."

It is respectfully submitted that the references do not mention providing "a hard mask that can better control critical dimensions by minimizing standing wave effects." Since a hint or suggestion does not appear in the cited references, Applicants respectfully request an Examiner Affidavit disclosing the Examiner's personal knowledge regarding this limitation pursuant to 37 CFR §1.104(d)(2) (2002):

"When a rejection in an application is based on facts within the personal knowledge of an employee of the Office, the data shall be as specific as possible and the reference must be supported, when called for by the applicant, by the affidavit of such employee, and such affidavit shall be subject to contradiction or explanation by the affidavits of the applicant and other persons."

Serial No.: 10/612,554
Group Art Unit: 2813

Based on the above, it is respectfully submitted that claims 2-3 are allowable under 35 USC §103(a) as being unobvious over AAPA in view of Matsunaga further in view of Lin because in *In re Sang-Su Lee*, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002), the Court held that the conclusion of obviousness may not be made from common knowledge and common sense of a person of ordinary skill in the art without any specific hint or suggestion in a particular reference.

Claims 4-5 are rejected under 35 USC §103(a) as being unpatentable over AAPA (hereinafter "AAPA") in view of Matsunaga (USPN 6,392,310, hereinafter "Matsunaga") further in view of Lin et al. (USPN 6,407,002, hereinafter "Lin") further in view of Cherng (USPN 6,271,117, hereinafter "Cherng").

Pertaining to claim 4-5, Applicants respectfully traverse the rejections since the same arguments applied to the rejection of claims 1-3 above apply for these claims.

In addition, taken as a whole Cherng would be inoperative with the combination of AAPA and Matsunaga in teaching the contact through a liner layer or a nitride layer, which would cause current leakage. Thus, it is respectfully submitted that claims 4 and 5 are allowable under 35 USC §103(a) as not being obvious based on any combination, including AAPA and Matsunaga, because the combination would be taught away from and would be inoperative under *In re Gordon*, supra.

The other references cited by the Examiner showing the prior art have been considered and are not believed to disclose, teach, or suggest, either singularly or in combination, Applicants' invention as claimed.

Conclusion

In view of the above, it is submitted that the claims are in condition for allowance and reconsideration of the rejections is respectfully requested. Allowance of claims 1-5 at an early date is solicited.

Serial No.: 10/612,554
Group Art Unit: 2813

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including any extension of time fees, to Deposit Account No. 01-0365 and please credit any excess fees to such deposit account.

Respectfully submitted,



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